



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES &
ENVIRONMENTAL CONTROL
DIVISION OF WATER
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Water Supply Section

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MEMORANDUM

TO: Marlene Baust

THROUGH: Anita Beckel *AMB*
Jack Hayes *JH*

FROM: Blair Venables P.G. *B.V.*

RE: ANSRWRF: The May 5, 2017 Amended DDR for Phase 1

DATE: July 25, 2017

BACKGROUND

The Groundwater Protection Branch (GPB) has reviewed Artesian's latest (May 5, 2017) Design Development Report (DDR) submittal entitled: "Amended DDR Artesian Northern Sussex Regional Wastewater Recharge Facility (ANSRWRF) Phase 1. During this phase, treated wastewater will be derived from the Allan Harim poultry plant located in Harbeson, DE. The wastewater will be pumped to a lagoon to be built at ANSRWRF. The wastewater effluent will then be sprayed on ANSRWRF fields D, E, F, and G at an application rate of 1.65" per week. Total nitrogen concentrations in the effluent are anticipated to be 30 mg/L. Findings provided in the March 3, 2010 ground-water mounding analysis report performed by Artesian Resources indicate that the site can likely handle the 1.65" application rate and the GPB approved of this rate in a March 25, 2010 memo to the Groundwater Discharges Section (GDS).

OUTSTANDING CONCERNS

Monitor-Well Network

The locations for required monitor wells (MW) s, observation wells (OW) s and lysimeters are shown on the Spray Irrigation System Site Plans for the amended DDR in Appendix I. The location for the lagoon's required upgradient MW that was previously requested by the GPB in a March 28th 2017 memo to the GWDS has been added to the current site plan.

With the exception of an additional OW which is needed and must be installed in a wet spot on field G, the ground-water monitoring network appears satisfactory and is essentially the same as the MW network for a previous Artesian report that the GPB reviewed and commented on in our last formal memo (the March 28, 2017 memo) to the Groundwater Discharge Section (GWDS). The 32' elevation contour where the wet spot is located can be found on sheet 33 of the current design plans for the facility. This wet spot occurs within the proposed new center-pivot area 65 and lies approximately 320' east of the center pivot.

Artesian's Request for an Application Rate Increase

In March of 2017, the GWDS informed the GPB that Artesian may seek approval for an increase in the approved application rate of 1.65" per week to a rate of 2.5" per week. Artesian wanted to know what type of analysis would have to be performed in order for the GPB to approve of the increased application rate. The most straight forward way to predict whether mounding is likely to be an issue and if so, where mounding will likely occur as a result of the 2.5" per week application rate, is to perform an additional groundwater-mounding analysis run with the 2.5" application rate. Prior to running such an analysis, a plan specifying all the groundwater-modeling details such as the type of model and the methodology for determining which areas will have high (shallow) water-table violations must be submitted and approved by the Department. In addition, details must be provided regarding how and over what extent a specific spray area will be shut down etc. should mounding become problematic.

Well Search Review

Well search information provided in Artesian's 5/7/17 amended DDR is outdated and was completed prior to 6/16/09. If new homes have been built within 1000' of the proposed spray irrigation fields and in areas without central water, the well search will have to be updated and all applicable information such as tax map parcel (TMP) numbers, well permit numbers (DNREC ID's), owners name, and well locations etc. must be submitted to the Department.

CONCLUSIONS\REQUIREMENTS

Provided the above referenced OW is installed in the "wet spot" on field G and provided updates are made to the well search as necessary, the GPB is not opposed to phase 1 of the project.

Should Artesian continue with their pursuit of obtaining approval for an increase in the spray-application rate at ANSRWRF, they or their representatives will have to run groundwater-mounding model simulations indicating that the site can handle the increase in the wastewater load. Other requirements regarding well surveying and ground-water monitoring must be completed and or implemented as stated in the spray permit for the facility.

If you have any questions, concerns, or comments related to this memo, please feel free to contact me.